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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/994,944

11/28/2001

Stefan Davidsson

4015-6

7288

7590

07/11/2005

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EXAMINER

WONG, BLANCHE

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/994,944		DAVIDSSON ET AL.	
	Examiner		Art Unit	
	Blanche Wong		2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-22, 25, 31-33 and 51-53 is/are rejected.
- 7) ☒ Claim(s) 14, 23, 24, 26-30, 34-50 and 54-58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Jan'02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The publication as provided on the Informative Disclosure Statement dated January 16, 2002, "Analysis and Simulation of a Digital Mobile Channel Using OFDM" (vol. COM33, No. 7, IEEE Transactions on Communications, July 1985, pp.665-675), was not found in the record of this present application.

Specification

2. The disclosure is objected to because of the following informalities: the abbreviation PDU on p. 2, para. 2, needs to be spelled out when use for the first time. It is unclear what is the abbreviation PDU.

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 30 in Fig. 3, as disclosed on p. 8, para. 7.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 4-13,15-22,51-52** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to cl. 4, it is unclear whether – the demodulator – in ln. 2 is the same – a demodulator – in ln. 14.

With regard to cl. 4, ln. 13 and cl. 15, ln. 12, it is unclear whether – the timing unit – is the same as the timing correction unit.

With regard to cl. 5, it is unclear whether – a time corrected channel estimate – in ln. 4, is the same as – a time corrected channel estimate – of cl. 4, ln. 13.

With regard to cl. 51, ln. 1 and cl. 52, ln. 1, it is unclear what is – the method of cl. 1 – and – the method of cl. 51 --.

6. There is insufficient antecedent basis for this limitation in the claim.

- Cl. 4 recites the limitation "the demodulator" in ln. 2, and "the timing unit" in ln. 13.
- Cl. 15 recites the limitation "the timing unit" in ln. 12.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 1-3,31-33** are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Castelain (U.S. Pat NO. 6,876,672).

With regard to cl. 1 and 31, Castelain discloses (see Fig. 1) a radio receiver 20 which receives (receiving unit 27, col. 2, ln. 38) plural (a plurality of sub-carriers with distinct respective frequencies, col. 1, ln. 56-57 and col. 2, ln. 27-31) modulated (see signal coding/modulation 12)(modulation signals, col. 1, ln. 45) radio frequency carriers

Art Unit: 2667

and produces therefrom a modulated base-band (col. 2, ln. 38) signal, the plurality modulated radio frequency carriers having been transmitted by a radio transmitter 10 operating in accordance with a transmitter sample clock 16 (time base, col. 2, ln. 31);

a receiver sample clock 26 (time base, col. 2, ln. 41-42) which is used for sampling the modulated base-band signal; and

a timing correction unit (correcting, col. 5, ln. 40)(determining unit 28, col. 5, ln. 31, in combination with estimation unit 23 and phase shift generator 30, col. 5, ln. 38-42) which performs in the frequency domain (determining ... at a frequency ... an analysis window, col. 5, ln. 32-34) a timing drift compensation (not only the effect of the transmission channel, but also the phase shift, col. 5, ln. 39-40) between the transmitter sample clock (transmitter sampling frequency, col. 5, ln. 47-48) and the receiver sample clock (receiver sampling frequency, col. 5, ln. 50).

With regard to cl. 2 and 32, Castelain further discloses OFDM, col. 1, ln. 63.

With regard to cl. 3 and 33, Castelain further discloses timing drift compensation using a frequency estimation (phase shift, col. 5, ln. 40) and frequency domain channel estimation (the effect of the transmission channel, col. 5, ln. 39).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 1-3, 25, 31-33 and 53** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ohkubo et al. (U.S. Pat No. 5,959,965).

With regard to cl. 25 and 53, Ohkubo discloses a radio receiver (see Fig. 3) which receives plural modulated radio frequency carriers (OFDM signal, col. 13, ln. 63) and produces therefrom a modulated base-band signal (col. 13, ln. 60-col. 14, ln. 12), the plural modulated radio frequency carriers having been transmitted by a radio transmitter operating in accordance with a transmitter sample clock (it is inherent that there is a transmitter of the OFDM signal and it has a transmitter clock because the OFDM signal is sent according to an RF frequency band, col. 13, ln. 63);

a receiver sample clock (oscillator 10, col. 13, ln. 66) which is used for sampling the modulated base-band signal;

a frequency offset estimation unit 16 (frequency deviation detector including its input from 101, col. 14, ln. 13-32) which outputs a frequency offset estimation (see output of frequency deviation detector or W, col. 31);

a controller (timing controller 19 in combination with its inputs from frequency deviation detector 16 and timing variation detector 18) which uses the frequency offset estimation to determine an estimated relative sample clock offset (see output of timing controller into symbol selector 15; see adjustment, col. 14, ln. 54-56), the estimated relative sample clock offset being an offset between the receiver sample clock and the transmitter sample clock.

With regard to cl. 1 and 31, Ohkubo discloses a radio receiver (see Fig. 3) which receives plural modulated radio frequency carriers (OFDM signal, col. 13, ln. 63) and

produces therefrom a modulated base-band signal (col. 13, ln. 60-col. 14, ln. 12), the plural modulated radio frequency carriers having been transmitted by a radio transmitter operating in accordance with a transmitter sample clock (it is inherent that there is a transmitter of the OFDM signal and it has a transmitter clock because the OFDM signal is sent according to an RF frequency band, col. 13, ln. 63);

a receiver sample clock (oscillator 10, col. 13, ln. 66) which is used for sampling the modulated base-band signal; and

a timing correction unit (timing variation detector 18) which performs in the frequency domain (inverse FFT processor 17) a timing drift compensation (output of timing variation detector 18) between the transmitter sample clock and the receiver sample clock.

With regard to cl. 2 and 32, Ohkubo discloses OFDM (col. 13, ln. 63).

With regard to cl. 3 and 33, Ohkudo discloses timing drift compensation (output of timing variation detector 18) using a frequency estimation (frequency deviation detector 16 in combination with 101) and frequency domain channel estimation (timing variation detector 18 in combination with inverse FFT processor 17).

Allowable Subject Matter

11. Claims 14,23,24,26-30,34-50,54-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2667

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-3177. The examiner can normally be reached on Monday through Friday, 830am to 530pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BW

BW

June 26, 2005


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2667 7/8/05